

Remarks

For reasons which follow, reconsideration of this Patent Application is respectfully requested.

The Office Action of May 20, 2008, first presents separate rejections of claims 1 and 10 under 35 U.S.C. §112, first paragraph, for failing to comply with the enablement requirement. Such rejection of applicants' claims is respectfully traversed for reasons which follow.

Section 2164.01 of the Manual of Patent Examining Procedure indicates that:

Any analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention.

The subject matter of claim 1 is an "apparatus for precisely and reliably assembling a critical joint, comprising: a thread-forming fastener including a head for engagement by a tool for applying a torque to the fastener, and a body portion extending from the head and including thread-forming portions; and an ultrasonic transducer coupled with the fastener, for making precise and reliable ultrasonic load measurements in the fastener". The subject matter of claim 10 is a "method of making a load indicating, thread-forming fastener for precisely and reliably assembling a critical joint".

A "load indicating thread-forming fastener which is

produced in accordance with the present invention" is disclosed from line 15 of page 3 to line 15 of page 5 of the specification for this Patent Application, as originally filed. Manufacture of the load indicating thread-forming fastener is disclosed from line 16 of page 5 to line 1 of page 6 of the specification for this Patent Application, as originally filed. Consequently, the specification for this Patent Application, as originally filed, contained sufficient information regarding the subject matter of the claims, i.e., a load indicating, thread-forming fastener for precisely and reliably assembling a critical joint, and a method for making it, as to enable one skilled in the pertinent art to make the claimed invention.

Problems associated with the measurement of load in a thread-forming fastener are discussed from line 2 to line 30 of page 6 of the specification for this Patent Application, as originally filed. Use of the load indicating thread-forming fastener which is disclosed from line 15 of page 3 to line 1 of page 6 of the specification for this Patent Application, as originally filed, to solve the problems associated with the measurement of load in a thread-forming fastener, is disclosed from line 31 of page 6 to line 4 of page 8. Consequently, the specification for this Patent Application, as originally filed, contained sufficient information regarding the subject matter of the claims, i.e., a load indicating, thread-forming fastener for precisely and reliably assembling a critical joint, and a method for making it, as to enable one skilled in the pertinent art to

use the claimed invention.

Noting Section 2164.01(b) of the Manual of Patent Examining Procedure:

As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C. 112 is satisfied. (citing *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970), emphasis added)

It is submitted that the disclosure provided from line 15 of page 3 to line 4 of page 8 of the specification for this Patent Application, as originally filed, "bears a reasonable correlation" to an "apparatus for precisely and reliably assembling a critical joint, comprising: a thread-forming fastener including a head for engagement by a tool for applying a torque to the fastener, and a body portion extending from the head and including thread-forming portions; and an ultrasonic transducer coupled with the fastener, for making precise and reliable ultrasonic load measurements in the fastener", as is recited in claim 1, and a "method of making a load indicating, thread-forming fastener for precisely and reliably assembling a critical joint", as is recited in claim 10. Consequently, it is submitted that applicants' claims 1 and 10 properly satisfy the enablement requirement of 35 U.S.C. §112, first paragraph.

As the Examiner correctly notes, at Paragraphs 4 and 7 of the Office Action of May 20, 2008, applicants' specification states that "[w]ithout compensation, [thermal effects associated with a thread-forming fastener] can result in inaccuracies of

load measurement on the order of 5% to 20%, depending on the bolt, the joint and the assembly process being used" (at lines 19 to 22 of page 6). From this, the Examiner concludes "that the uncompensated apparatus as presently claimed contains subject matter which is not enabled by the description" and that "the Examiner must rely on the 5% to 20% error benchmark for the assertion of precise and reliable load measurements". It is submitted that such conclusions are improperly drawn from the statement which is made in applicants' specification from line 19 to line 22 of page 6.

Firstly, the statement made from line 19 to line 22 of page 6 of applicants' specification does not in any way alter or contradict the foregoing analysis establishing that the disclosure provided from line 15 of page 3 to line 4 of page 8 of the specification for this Patent Application, as originally filed, "bears a reasonable correlation" to an "apparatus for precisely and reliably assembling a critical joint, comprising: a thread-forming fastener including a head for engagement by a tool for applying a torque to the fastener, and a body portion extending from the head and including thread-forming portions; and an ultrasonic transducer coupled with the fastener, for making precise and reliable ultrasonic load measurements in the fastener", as is recited in claim 1, and a "method of making a load indicating, thread-forming fastener for precisely and reliably assembling a critical joint", as is recited in claim 10, establishing that applicants' claims 1 and 10 properly satisfy

the enablement requirement of 35 U.S.C. §112, first paragraph.

Secondly, the conclusion drawn from the statement made in applicants' specification from line 19 to line 22 of page 6 "that the uncompensated apparatus as presently claimed contains subject matter which is not enabled by the description" does not properly acknowledge that the "entire scope of the claim" is, relative to claim 1, a load indicating thread-forming fastener "for precisely and reliably assembling a critical joint" and, relative to claim 10, a "method of making a load indicating, thread-forming fastener for precisely and reliably assembling a critical joint", both of which are disclosed in applicants' specification in sufficient terms "to enable any person skilled in the art... to make and use the same", in accordance with 35 U.S.C. §112, first paragraph.

Thirdly, the conclusion drawn from the statement made in applicants' specification from line 19 to line 22 of page 6 that "the Examiner must rely on the 5% to 20% error benchmark for the assertion of precise and reliable load measurements" does not properly acknowledge what the person skilled in the art would have understood a precise and reliable load measurement to be, which is the required benchmark for an analysis of enablement in accordance with 35 U.S.C. §112, first paragraph.

As is noted in the specification for this Patent Application, the person skilled in the art would have understood that while thread-forming fasteners had been used in any of a number of industries, "such fasteners are generally restricted

to non-critical or less-critical applications" and that "[t]he difficulty in controlling the tightening process prevents their use in critical applications" (page 1, lines 25 to 30). The specification further indicates what the person skilled in the art would have considered a "non-critical" or "less-critical" application to be and what the person skilled in the art would have considered a "critical application" to be. In particular, reference is made to page 6, lines 14 to 22, which indicate that inaccuracies on the order of 5% to 20% would be anticipated for non-critical or less-critical applications, and to page 5, lines 24 to 30, which indicate that accuracies of up to 3% would be considered appropriate for critical applications. Further evidence supporting this conclusion was presented in the "Supplement to Declaration of Ian E. Kibblewhite" submitted with the "Request for Continued Examination (RCE) Transmittal" that was filed on April 7, 2008 (noting, for example, Paragraphs 7 to 11).

Consequently, it is submitted that it is improper for the Examiner to "rely on the 5% to 20% error benchmark for the assertion of precise and reliable load measurements" when it has been clearly shown that the person skilled in the art would have understood the error benchmark for precise and reliable load measurements to be less than 5%, and typically from 1% to 3%.

It is, therefore, submitted that claims 1 and 10 are not properly subject to rejection under 35 U.S.C. §112, first paragraph, for failing to comply with the enablement requirement,

and reconsideration and withdrawal of this rejection of claims is respectfully requested. It is further respectfully submitted that the Examiner's reliance on a 5% to 20% error benchmark for precise and reliable load measurements is incorrect, and would not constitute what the person skilled in the art would have known the benchmark for precise and reliable load measurements to be, showing the rejections of claims under 35 U.S.C. §103(a) to be improper, as well.

The Office Action of May 20, 2008, also restates various rejections of claims under 35 U.S.C. §103(a). Claims 1 to 5, 7, 10 to 14 and 16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over a proposed combination of U.S. Patent No. 5,242,253 (Fulmer) and U.S. Patent No. 5,131,276 (Kibblewhite). Claims 6 and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the proposed combination of Fulmer and Kibblewhite, in further combination with U.S. Patent No. 6,726,960 (Sanduja et al.), and claims 8, 9, 17 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the proposed combination of Fulmer and Kibblewhite, in further combination with International Publication No. WO 00/63565 (Hoffmeister et al.). Consequently, such rejections of claims are, once again, based primarily on a proposed combination of Fulmer and Kibblewhite, either alone or in further combination with other documents.

Noting Paragraphs 2 and 12 of the Office Action, the position is taken that the proposed combination of Fulmer and

Kibblewhite "teaches an ultrasonic transducer applied to a thread-forming fastener which has a head and a body portion" because:

One of ordinary skill in the art at the time the invention was made would have recognized that a thread-forming fastener and a bolt, rod, rivet or stud are known equivalents for providing a secure connection between structural elements within the fastener art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute one known element (thread-forming fastener) for another known equivalent (bolt, rod, rivet, stud) resulting in the predictable result of forming a secure connection between structural elements. (emphasis added)

Even if it is assumed that the person of ordinary skill in the art at the time the present invention was made would have recognized that a thread-forming fastener and a bolt, rod, rivet or stud would have been known equivalents for providing a secure connection between structural elements within the fastener art, this does not establish that the person of ordinary skill in the art at the time the present invention was made would have recognized that a thread-forming fastener and a bolt, rod, rivet or stud would have been known equivalents for providing a precise and reliable assembled critical joint between structural elements within the fastener art, as is specifically recited in applicants' claims 1 and 10.

Reasons why the person of ordinary skill in the art at the time the present invention was made would not have recognized a thread-forming fastener and a bolt, rod, rivet or stud to have been known equivalents for providing a precise and reliable

assembled critical joint between structural elements within the fastener art have been extensively presented in the responsive submissions and Declarations which have previously been submitted in this matter. Such reasons need not be restated herein, and are incorporated by reference as if fully set forth in these Remarks.

However, one significant reason why the person of ordinary skill in the art at the time the present invention was made would not have recognized a thread-forming fastener and a bolt, rod, rivet or stud to have been known equivalents for providing a precise and reliable assembled critical joint between structural elements within the fastener art is that the person of ordinary skill in the art at the time the present invention was made would not have viewed inaccuracies on the 5% to 20% to be the benchmark for precise and reliable load measurements, but would rather have understood the error benchmark for precise and reliable load measurements to be less than 5%, and typically from 1% to 3%. Because of this, the person of ordinary skill in the art at the time the present invention was made would not have considered a thread-forming fastener and a bolt, rod, rivet or stud to have been known equivalents for providing a precise and reliable assembled critical joint between structural elements within the fastener art, and would not have even considered the combination of Fulmer and Kibblewhite which continues to be proposed in this matter despite clear evidence to the contrary.

Pages 17 to 20 of the Office Action of May 20, 2008,

make numerous statements which are presented in an effort to justify the proposed combination of Fulmer and Kibblewhite. It is submitted that these statements contain various errors, in fact and in law, including the following.

Paragraph 24 of the Office Action states that the "inaccuracy encountered during the use of the device, as declared by Kibblewhite, would not, in the Examiner's position be enough to prevent one of ordinary skill in the art from pursuing the combination of the teachings of Fulmer and Kibblewhite". While the incorrectness of this position has previously been clearly demonstrated, further support for this position is presented in Paragraph 25 of the Office Action, which states that even if "ultrasonic transducers were not used in applications where the error in measurement could not be guaranteed to be below 5%, it would have been obvious to one of ordinary skill in the art to attempt to guarantee that the error in measurement was lower than [sic] 5% so that the ultrasonic transducer method could be used". This, however, is the solution to the problem identified in the present Patent Application which was taught by applicants' disclosure, not by the disclosures of Fulmer and Kibblewhite, therefore constituting an impermissible hindsight reconstruction of applicants' claimed invention.

Paragraph 25 of the Office Action, at the top of page 18, further states that "the claimed device and method do not provide for a structure or method step that guarantees error to be below 5%" and that "the claims do not recite that the error is

required to be that low". This ignores the language presented in claim 1 which recites an "ultrasonic transducer coupled with the fastener, for making precise and reliable ultrasonic load measurements in the fastener" and the language presented in claim 10 which recites the step of "attaching an ultrasonic transducer for making precise and reliable ultrasonic load measurements in the fastener to the first end of the fastener", both of which do require the error to be below 5%. The enablement position taken at the end of Paragraph 25 has previously been shown to constitute error, and need not be restated here.

At the middle of page 18 of the Office Action of May 20, 2008, the position is taken "that Applicant has argued features which are not claimed" because "Claims 19 and 20, withdrawn, recite the limitation of accurately monitoring the load". It has previously been shown that this is incorrect, and that applicants' position is commensurate with language presented in claims 1 and 10. Nevertheless, and in addition, claims 39 to 45 have been newly presented in combination with the apparatus of claim 1 to recite such features.

At the top of page 19 of the Office Action, the position is taken that "Kibblewhite does not teach away from the use of a thread-forming fastener as a suitable structural element for providing a connection between structural elements" and that "[i]f the prior art structure is capable of performing the intended use, then it meets the claim". At the bottom of page 19, it is further stated that "[s]ince the invention is

not concerned with correcting, identifying or monitoring these errors, a person of ordinary skill would find that the combination, without further modification would predictably be inaccurate".

As has previously been established, even if the position is taken that the person of ordinary skill in the art at the time the present invention was made would have considered coupling the ultrasonic transducer of Kibblewhite with Fulmer's thread-forming fastener, the disclosures of Fulmer and Kibblewhite do not disclose how to produce an ultrasonic transducer coupled with a thread-forming fastener for making precise and reliable ultrasonic load measurements in the fastener, as is positively recited in claim 1, or attachment of an ultrasonic transducer to a thread-forming fastener for making precise and reliable ultrasonic load measurements in the fastener, as is positively recited in claim 10. Moreover, and because the person of ordinary skill in the art at the time the present invention was made would have understood that the positive recitation in applicants' claims of an ultrasonic transducer coupled with a thread-forming fastener for making precise and reliable ultrasonic load measurements in the fastener would require an error of less than 5% to be maintained for this to be accomplished, it has been shown that the proposed prior art structure is not capable of performing its intended use.

Consequently, it is submitted that the claims have not been met, and that there has been a clear demonstration

that Kibblewhite does in fact teach away from the use of a thread-forming fastener as a suitable structural element for providing a critical joint between structural elements.

Also to be noted is Section 2143.02 of the Manual of Patent Examining Procedure, which indicates that while:

[o]bviousness does not require absolute predictability..., at least some degree of predictability is required. Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness. (citing *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976))

Whether an art is predictable or whether the proposed modification or combination of the prior art has a reasonable expectation of success is determined at the time the invention was made. (citing *Ex parte Erlich*, 3 USPQ2d 1011 (Bd. Pat. App. & Inter. 1986))

Because the Examiner indicates that "a person of ordinary skill would find that the combination [of Fulmer and Kibblewhite], without further modification would predictably be inaccurate" (emphasis added), the person of ordinary skill in the art, at the time the present invention was made, would have had no reasonable expectation that a combination of Fulmer and Kibblewhite would have been successful in providing either an ultrasonic transducer coupled with a thread-forming fastener for making precise and reliable ultrasonic load measurements in the fastener, as is recited in claim 1, or the attachment of an ultrasonic transducer to a thread-forming fastener for making precise and reliable ultrasonic load measurements in the fastener, as is recited in claim 10. As a consequence, a "conclusion of nonobviousness" over the proposed combination

of Fulmer and Kibblewhite should follow.

And finally, at the middle of page 20 of the Office Action, the Examiner states that "according to the Applicant, ...the **unmodified** combination of an ultrasonic transducer with a thread-forming fastener would have been inoperative for the purpose of measuring precise and reliable results" (emphasis in the Office Action). Here, the Examiner mischaracterizes applicants' stated position, which was that considering the understanding of the person of ordinary skill in the art at the time applicants' invention was made, and without the teachings provided by applicants' disclosure, the person of ordinary skill would have considered the proposed combination of Fulmer and Kibblewhite to be inoperative, and therefore, would not have made such a combination.

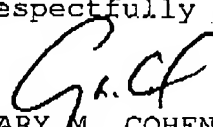
It is, therefore, submitted that applicants' claims are not properly subject to rejection under 35 U.S.C. §103(a) over the proposed combination of Fulmer and Kibblewhite, whether or not combined with Sanduja et al. or Hoffmeister et al., and reconsideration and withdrawal of this rejection of claims is respectfully requested.

Respectfully submitted,

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office (Fax No. 571-273-8300) on: November 20, 2008.

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